

# The Patterns of Hezhang Walnut Industry Development from the Perspective of Characteristic Agriculture

Yujie Wang<sup>1,a,\*</sup>, Xingwang Liu<sup>1,b</sup>

<sup>1</sup>School of Economics and Finance, Guizhou University of Commerce, Guiyang, China

<sup>a</sup>andreawang0113@163.com, <sup>b</sup>2477670989@qq.com

\*corresponding author

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**Abstract:** As a requisite part of modern agriculture, characteristic agriculture can make full use of regional comparative advantages, improve the utilization rate of resources and the competitiveness of agricultural products, and promote the development of regional modern agriculture. According to the connotation of characteristic agriculture and the regional conditions of Hezhang County, from the perspective of characteristic agriculture, this paper analyzes the patterns and results of Hezhang walnut industry, including: “natural resources advantage accelerates specialty agriculture”, “advantage of culture and tourism resources promotes sightseeing agriculture”, and “science and technology advantage facilitates demonstration agriculture”.

## 1. Introduction

Developing characteristic agriculture is an important step for rural areas to implement rural revitalization strategy, and a requisite way to achieve industrial prosperity, a well-off life and an ecologically livable environment. As a significant part of modern agriculture, characteristic agriculture can give full play to regional comparative advantages, improve regional resource utilization efficiency and market competitiveness of agricultural products, and promote the development of regional modern agriculture. Therefore, it has become a hot topic of academic research. However, at present, no scholars have analyzed Hezhang walnut industry from a characteristic agricultural point of view. Based on the background of strategy of rural revitalization, this paper analyzes patterns and effects of Hezhang walnut industry from the perspective of characteristic agriculture, in order to provide useful reference for the development of characteristic agriculture in other regions.

## 2. The Conception and Characteristics of Characteristic Agriculture

### 2.1 The Conception of Characteristic Agriculture

On the definition of characteristic agriculture, the academic world has not yet formed a widely accepted definition. This paper defines it from the perspective of regional resources and market economy: characteristic agriculture is a kind of modern agriculture that produces or provides agricultural products or services with obvious regional uniqueness and strong market competitiveness based on the resource advantages of specific regions and for the purpose of market demand. The “characteristic” in characteristic agriculture is compared with agriculture in other regions, in other words, the “characteristic” is the comparative advantage of agriculture. Characteristic agriculture is a counterpoint concept to conventional agriculture which produces basic agricultural products. Characteristic agriculture includes specialty agriculture, demonstration agriculture, sightseeing agriculture, etc.

### 2.2 The Characteristics of Characteristic Agriculture

#### 2.2.1 Distinctive Regional Features

“Regional” is the most obvious feature of characteristic agriculture. The requirement of characteristic agriculture to “characteristic” determines that its development must be based on the unique natural conditions of specific geographical areas, transform the uniqueness of the region into the scarcity of products or services, and highlight the role of natural conditions in improving the quality of agricultural products. Characteristic agricultural products such as West Lake Longjing Tea, Korle Sweet pear, Ningxia wolfberry, their brands contain natural conditions as the core of the regional characteristics.

### **2.2.2 Rely on Regional Advantages**

Difference of geographical location determines different regional comparative advantages supporting the development of characteristic agriculture in different regions. The important way to improve the market competitiveness of characteristic agriculture is to give play to its regional advantages, that is, to make good use of the advantages of resources, geographical conditions, technical advantages relative to the cost advantages of surrounding areas, and form regional large-scale production.

### **2.2.3 Diverse Modes of Development**

Diverse regional advantages and unique regional culture make characteristic agriculture form a variety of development paths which are adapted for nature, economy and society of the region. For example, the advantages of species resources and natural resources jointly promote the specialty agriculture and sightseeing agriculture. Geographical advantages facilitate the development of regional agriculture. Technological superiority accelerates engineering agriculture and demonstration agriculture. In recent years, there has been a trend of integration of characteristic agriculture with secondary and tertiary industries, which has diversified the patterns of characteristic agriculture.

## **3. The Regional Conditions and Characteristics of Walnut Industry in Hezhang**

### **3.1 Excellent Geographical Location**

Hezhang County belongs to Bijie City, Guizhou Province, located in the northwest of Guizhou Plateau. It is at an elevation of 1996 meters, and the terrain is mainly mountainous and hilly, accounting for 71.9%, with little flat land, which is conducive to drainage. Most soil has a pH value of 5.5-8.2, which is suitable for the walnut growth. The county is located in the subtropical monsoon humid climate area, with no extreme weather, and, rain and heat are in the same period. Thus, the unique microclimate is overwhelmingly suitable for the walnut growth. The annual average temperature in Hezhang County is 13.8°C, and the annual accumulated temperature which is higher than 10°C is between 2500~3750°C. The annual accumulated temperature is high, and the temperature difference between day and night is big, which is conducive to the accumulation of walnut organic matter. The frost-free period is 206~255 days, which is beneficial to the growth of walnut flower buds. The annual average rainfall is 785.5~1068.0 mm, the annual sunshine number is between 1096~1769 hours, and the annual average precipitation is between 849-1399 mm, which provides the illumination and precipitation needed for walnut growth.<sup>[1]</sup>

### **3.2 High-Quality Walnut Species Resources**

Hezhang County walnut planting area is large, with walnuts planted in 30 towns (streets). In Hezhang County, a total of 110,666 hectares of walnuts have been planted, with a fruitage ratio of 21,333 hectares and a walnut yield of 38,400 tons.<sup>[2]</sup> Hezhang County has a long history of walnut cultivation, native high-quality walnut germplasm resources throughout the county, the age of many walnut trees has been more than one hundred years. According to the ancient books of local minorities, Hezhang native residents as early as Qin and Han Dynasties have been eating walnuts, from the 1750s have begun artificial cultivation of walnuts. Hezhang walnut quality is high, the shell thickness is moderate, the kernel is full and easy to take out, the oil amount is high, and the

taste is delicate and mellow. Chuan walnut, Eggshell walnut and Wuren walnut are all excellent varieties. The quality of “Qianhe No.7” is the best in Hezhang County at present for its physical and chemical indexes are much higher than the international standard of special-class commodity walnut.

### **3.3 Strong Scientific and Technological Support**

In order to utilize walnut resources more efficiently, Hezhang County has established long-term cooperative relations with the Agricultural College of Guizhou University, Guizhou Walnut Research Institute, Bijie Forestry Institute and other scientific institutes in walnut scientific research. With strong scientific and technological support, Hezhang walnut industry explores the walnut cultivation technology, stereo planting mode, large tree yielding comprehensive technology, deep processing and standardization of technical regulations and product quality standards. In 2016, Hezhang County cooperated with College of Agriculture of Guizhou University to carry out technological research and development of walnut, and successfully formulated the “Nine Ones” standard of walnut planting technology. What’s more, walnut green branch grafting technology was granted the “invention certificate” by the State Intellectual Property Office. Furthermore, Hezhang County carried out walnut practical technology training for farmers, including technology introduction, technology consulting, etc. The number of participants in the training is tens of thousands, and each household basically has at least 1 person to master the key technology of walnut, and the professional scientific and technological talent team of walnut industry continues to expand.<sup>[2]</sup>

### **3.4 Rich Culture and Tourism Resources**

Hezhang County is located in the multi-ethnic Wumeng mountainous area, which has a profound national culture and affluent tourism resources. There are 17 ethnic minorities such as Yi, Miao and Buyi in the county, with profound cultural accumulation of ethnic minorities. Thus, there are 12 minority townships, among which Kele, Yi and Manchu Township, has been excavated Kele Ruin Site. Kele Ruin Site was rated by the Chinese Archaeological Association as one of the “Top Ten National Archaeological Discoveries” in 2001. The most representative site is Yelang Site from the Warring States Period to the Western Han Dynasty, which is an important support for the brand of Yelang in Guizhou and has momentous historical and scientific value for the study of Yelang culture and the development of Hezhang walnut. In terms of tourism resources, the Axilixi Grassland in Hezhang has an average altitude of more than 2,500 meters, with broad grasslands, strange peaks, deep ravines, caves and unique landforms. Besides, known as “China’s top ten summer mountains”, Jiucaiping located in Hezhang County, Axilixi Scenic Area, is the world’s largest area of wild chive flower belt and China’s only wild chive flower protection zone. What’s more, Hezhang National Forest Park which has rich local landscape, spectacular hydrological landscape and high value for tourism and expedition carries the prehistoric culture around 2000 years ago and the culture of ethnic groups.

## **4. The Main Development Patterns of Hezhang Walnut Industry**

### **4.1 Natural Resources Advantage Accelerates Specialty Agriculture**

Brand is the visiting card for an industry to enter the market and its characteristics are the competitiveness of industry to occupy the market. The advantaged climate, soil and walnut germplasm conditions provide a steady stream of power for Hezhang County to develop walnut specialty agriculture. Hezhang walnut specialty agriculture is based on the advantages of natural resources, focusing on the development of specialty walnut products, so far has developed walnut kernel, walnut candy, milk, walnut handicrafts, walnut oil and other specialties, nut output of 80,000 tons, annual output value of 3 billion yuan. At the same time, Hezhang County attaches great importance to the cultivation of specialty walnut brands, which has laid a solid foundation for Hezhang walnut products to enter the national and even international market. Hezhang County now

has Guizhou Hezhilin Food and Beverage Co., Ltd., Guizhou Limin Food Co., Ltd., Guizhou Jinguoyuan Walnut Industry Development Co., Ltd., and other deep processing enterprises, forming a series of walnut specialty brands such as “Axilixi”, “Hezhilin” and “Limin Food”. Since 2007, Hezhang walnut has been awarded the titles of “Olympic recommended fruit”, “China’s top ten excellent walnut”, “China’s famous fruit brand”, and Hezhang County has been selected as “China’s walnut town”. “Hezhilin” walnut milk was awarded the “Famous Trademark of Guizhou Province”, and “Guoyuanpin” walnut craft products obtained 19 design patents. In 2008, “Hezhilin” walnut milk obtained the “QS” certification of the State Administration of Quality Supervision and obtained the import and export rights, since then, Hezhang walnut began to enter the international market. In February 2013, the State Administration of Quality Supervision approved Hezhang walnut as “national geographical indication protection products”.<sup>[2]</sup> Up to now, Hezhang walnut specialty agriculture covers about 90% of the poor households, which generates more than 1,700 yuan per capita income for the farmers in the county every year, and makes more than 13,000 families who make a living growing walnuts with annual income of more than 10,000 yuan.

#### **4.2 Advantage of Culture and Tourism Resources Promotes Sightseeing Agriculture**

Hezhang county is located in a typical karst mountainous area in southwest China, with rolling mountains. After walnut enters fruit stage, the forest coverage rate of walnut forest in Hezhang county will increase by 30%, making walnut forest itself a kind of mountain sightseeing agriculture. According to the quantity of production factors, the area of walnut industry is divided into “core belt”, “development belt” and “radiation belt”. The radiation belt is most suitable for the development of landscape agriculture, as Axilixi Grassland and Jiucaiping are both located in it. It is worth noting that, Axilixi Grassland and “Axilixi” walnut series brand has a deep connection. In addition, the major archaeological discovery of Kele Ruin Site provides a cultural basis for the development of walnut industry in Hezhang, so the tourism industry in Hezhang and walnut industry appears a trend of integration. In December 2009, Hezhang County integrated land resources elements, rural folk customs and ancient Yelang culture, through reasonable planning to fully start the construction of Yelang Walnut Corridor which not only has the production function, but also can improve the environmental quality, providing sightseeing, leisure, vacation places for people. Hitherto, the main producing area of Hezhang walnut is more than 2 million mu, which is a good green ecological barrier in the upstream side of the Yangtze River and the Pearl River, and is conducive to realizing the maximization of economy-ecology benefits.

#### **4.3 Advantage of Science and Technology Facilitates Demonstration Agriculture**

Hezhang walnut industry is guided by the concept of modern industrial development and driven by technology such as grafting. Under the guidance of the “Hezhang County Agricultural Science and Technology Demonstration Model Implementation Plan” and other government documents, Hezhang walnut industry adopts the “1+N” industrial mode and the “leading enterprise + cooperative + village-level two committees + farmers + income sharing” mode, and vigorously builds “Walnut Standardization Demonstration Area” and “National Walnut Demonstration Base”. The county has built “National Walnut Standardization Demonstration Area” and standardization demonstration bases of 3,000 mu, including walnut germplasm bank of 200 mu (more than 70 varieties collected), high-quality walnut panicle nursery of 800 mu, and efficient walnut production demonstration base of 2,000 mu. So far, due to the highly-organized mode, Hezhang walnut industry has benefited a lot from efficient utilization of resources. For instance, Caishen and Zhuming Township have been identified as “National Walnut Demonstration Base” by the State Forestry Bureau. Hezhang walnut demonstration area is becoming the “vanguard” of characteristic agricultural in southwest China.

### **5. Conclusion**

To sum up, Hezhang walnut industry has effectively made use of its advantages in its development. On the basis, it formed manifold agriculture patterns such as specialty agriculture,

sightseeing agriculture and demonstration agriculture. Consequently, it improves the standard of farmers' income, helps local government eliminate absolute poverty, and protects the regional ecological environment, gradually realizing the unification of ecological and economic benefit. The development of walnut industry is the concrete implementation of the rural revitalization strategy, which is of great significance to consolidate the achievements of poverty alleviation in Wumeng Mountain and its contiguous areas, and promote the sustainable development of society and economy.

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